Daniel Lurie, Mayor

Kat Anderson, Commission President
Philip A. Ginsburg, General Manager

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Vaillancourt Fountain

Executive Summary

The Vaillancourt Fountain, installed in 1971, has exceeded its functional life expectancy and has been fully inoperable since May 2024 due to the failure of the last operational pump. The system's mechanical and electrical infrastructure is obsolete, and its underground vault poses significant safety hazards. A full restoration and modernization is required for safe, code-compliant, and sustainable operation into the future.

Condition Assessment

- Mechanical and Electrical Failure
  - The fountain's pumps and motors are all original and have progressively failed. All four pumps are now inoperable.
  - Equipment has experienced severe degradation from flooding and age-related wear.
  - Electrical distribution systems are outdated, corroded, and dangerous, frequently tripping breakers and impacting plaza-wide power systems.
- Underground Vault Hazards
  - The underground pump station is classified as a confined space under modern OSHA standards and is no longer accessible for maintenance staff.
  - It is not waterproof, allowing inches of standing water to accumulate, and relies on a lift pump system with no backup power.
  - During outages, the vault floods, damaging motors, electrical panels (MCCs), and control systems.
- Fountain Basin and Waterproofing
  - The existing waterproofing membrane has failed. The basin must be completely stripped and rebuilt to pool-grade waterproofing standards to prevent leaks and structural damage.
- Lighting System Nonfunctional
  - While some lighting lenses appear intact, the fixtures are nonfunctional, and wiring is deteriorated beyond reuse.
  - A complete rewiring and fixture replacement is required.

Maintenance Summary

The Vaillancourt Fountain has historically required extensive, near-daily maintenance, reflective of its aging infrastructure and its visibility as a prominent public landmark. Over the course of its operational life, maintenance tasks have spanned preventive care, cosmetic upkeep, routine system checks, and emergency response—often requiring multi-trade coordination and specialized access protocols.

As a highly visible urban feature, the fountain has been a frequent target of graffiti and vandalism. City crews routinely responded to incidents involving defacement of the concrete surfaces, railings, and access points. These responses typically included repainting, chemical cleaning, and restoration of aesthetic elements.

Preventive maintenance was a continuous operational requirement, carried out by stationary engineers who performed daily inspections, monitored pump functionality, cleared debris, adjusted water levels, and managed electrical and mechanical systems. This included coordination with electricians for troubleshooting circuit failures and with laborers for physical clean-up.

One of the most labor-intensive recurring tasks was the quarterly draining of the fountain basin, which was necessary to remove accumulated sediment, debris, algae, and other biological material. These cleanouts were essential to avoid clogging and to maintain visual quality and system efficiency.

However, chronic waterproofing failures and system infiltration greatly intensified maintenance demands. The fountain's infrastructure suffered from persistent leakage and inadequate drainage, allowing water to seep into the underground mechanical vault. This created hazardous working conditions, led to frequent pump failure, and necessitated the deployment of vactor trucks to remove standing water. The lack of adequate separation between wet and dry zones within the vault further increased the likelihood of electrical system compromise and accelerated corrosion of critical components.

Confined space access requirements, coupled with these water-related hazards, made many routine tasks logistically complex and resource-intensive. In multiple cases, maintenance crews had to isolate power, deploy temporary ventilation, or stage mobile equipment simply to complete basic repairs.

In total, maintenance of the Vaillancourt Fountain averaged approximately $100,000 per year, inclusive of documented labor costs, travel and equipment time, material handling, and additional support activities which reflect tens of thousands of cumulative labor hours.

Full Scope of Systems and Components Needing Replacement

Mechanical Systems

- Circulation Pumps (4 units)
    - All existing pumps are inoperable.
    - Replacement with modern, energy-efficient models required.
- Pump Motors
    - Obsolete and flood-damaged; require full replacement.
- Pump Control Systems

        - Nonfunctional electrical controls must be rebuilt.
- Chemical Control System
    - Currently nonexistent. New system must include:
        - Chlorine injection
        - pH control
        - Safety sensors
- Filtration System
    - No filtration currently in place.
    - Requires commercial-grade multi-stage filter system (sand, cartridge, etc.).
- Lift Pump System for Vault Dewatering
    - Must be replaced or upgraded with automated sump system and flood sensors.
- Backflow Prevention Devices
    - Required for any modern water distribution system per public health code.

Electrical Systems

- Main Electrical Switchgear
    - Corroded and obsolete; must be replaced.
- Motor Control Centers (MCCs)
    - Severely water-damaged and outdated.
- Wiring and Conduit
    - Entire underground and basin lighting wiring must be replaced.
- Breaker Panels & Disconnects
    - Needed for modern load control, access, and safety.
- Lighting Systems
    - Fixtures (surface-mounted lenses are nonfunctional)
    - Wiring & Drivers/Transformers must be replaced.
    - Upgrade to LED or programmable lighting is recommended.
- Event Power Separation
    - Plaza systems are currently linked; must be restructured to avoid power interference.

Structural & Architectural Components

- New Above-Ground Pump Building
    - Code-compliant, weatherproof, and accessible.
    - Includes:
        - Ventilation systems
        - Equipment pads
        - Dedicated mechanical and electrical rooms
- Concrete Work
    - Repair or replace spalled or cracked fountain surfaces.
    - Reinforcement as required.
- Waterproofing Membrane
    - Full removal and replacement of basin waterproofing membrane.
    - Upgrade to pool-grade, chemical-resistant membrane.
- Drainage & Grading Improvements
    - Around pump building and basin to prevent water intrusion and protect foundation integrity.

Control and Monitoring Systems

- Automated Control System
  - Centralized controller for:
    - Pump operation
    - Water levels
    - Chemical dosing
- Remote Monitoring Capabilities
  - Optional feature for offsite diagnostics and alerts.
- Sensors & Alarms
  - Water level sensors
  - Chemical monitoring
  - Flood alarms
  - System failure alerts

Recommended Upgrades and Additions

- Backup Power System
  - Generator or battery backup to support:
    - Sump/lift pumps
    - Emergency lighting
    - Control systems
- Energy Efficiency Measures
  - Variable frequency drives for pumps
  - LED lighting upgrades
- Security Features
  - Access control system for new pump building
  - Cameras or surveillance system

Conclusion and Recommendation

The systems of the Vaillancourt Fountain are functionally and electrically beyond repair in its current state. The system has reached the end of its service life due to a combination of age, environmental exposure, and evolving safety standards. Decades of continuous operation in a challenging marine environment, coupled with original infrastructure not designed for long-term sustainability, have contributed to the fountain's deterioration.

Given the widespread failure of mechanical and electrical systems and waterproofing infrastructure, any attempt at partial repair or isolated upgrades would be insufficient. A full restoration and redesign project is required to address safety, code compliance, operational reliability, and long-term resilience. This work would include full replacement of mechanical and electrical systems and improvements to waterproofing, drainage, and accessibility.